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RECORD OF GEOGRAPHICAL PROGRESS.

AMERICA.

MOUNT ILLIMANI ASCENDED.—Sir Martin Conway left England for Bolivia early in the summer for the purpose of exploring the high group of the Andes containing the peaks Illimani and Illampu (Sorata). A despatch received from La Paz, Bolivia, on Sept. 14, announced that Conway had succeeded in reaching the summit of Illimani, which he found to be 22,500 feet above sea-level. He was accompanied by the guides who ascended Mount St. Elias with the Duke of the Abruzzi in 1897.

The highland region in which Sir Martin Conway is working, although not the culminating point of the South American Continent, contains at least the groups of peaks and domes which have the greatest mean altitude. Illampu and Illimani were both known to exceed 21,000 feet in height, and they indicate with sufficient accuracy the central point of the whole Andean system: while the central points of the northern and southern sections of the Cordilleras are similarly indicated by the other loftiest summits of America—in Ecuador, by Chimborazo, long supposed to be the highest mountain in the world, and in the Argentine-Chilian Andes by Aconcagua, the culminating peak of the New World. Mount Illampu is known to overtop Illimani, but the latter summit, though the second highest of Bolivian peaks, is still first in its imposing aspect and variety of outline. Its base is encircled by tropical plantations, while higher up grow the forests and crops of the temperate regions, and above this zone, high beyond the clouds, rise its three snowy peaks, one of which was scaled by Wiener in 1877, and by him named the Pic de Paris. It is not, however, the culminating point of the mountain, which is supposed to be the peak that Conway has now ascended.

A PECULIAR SOUTH AMERICAN TELEGRAPH.—The *Geographical Journal* (July, 1898) prints some interesting notes by Col. Church on the visit of Dr. Bach of La Plata, Argentina, who has made extensive explorations in remote parts of the Amazon Valley, giving special attention to the habits and customs of its tribes. Among the Catuquinaru, whom he visited in 1896–97, he found an extraordinary telegraphic apparatus called the *cambarysú*, which these

Indians use. One of them is hidden away in each hamlet occupied by the tribe. A hole is excavated in the ground, about half of which is filled with coarse sand, while above this, almost to the surface, are layers of fine sand, wood and bone fragments and powdered mica. These layers are in a case of hard palm wood which extends above the surface, and there is a hollow space between the underground layers and layers of hide, wood and hard rubber that make the upper part of the apparatus. The rubber top of the contrivance is struck with a club, resembling the stick with which a bass drum is beaten. The instruments are not more than a mile apart, and all are placed in a direct line north and south. When standing outside the building in which one of them is kept it is difficult to hear the blow, though it is distinctly heard in the building a mile distant. The instruments are *en rapport* with one another, and when struck the neighboring ones to the north and south respond to or echo the blow. An Indian at the instrument which thus responds answers the signal, and then the operators are able by a system of signalling to carry on a long conversation.

THE FREE ZONE.—The Free Zone is a narrow strip of territory extending along the northern border of Mexico from the Gulf of Mexico to the Pacific Ocean, and about $12\frac{1}{2}$ miles wide. It was established by Mexico many years ago as a concession to the States bordering the Rio Grande, and a protection against smuggling from the United States. There are a number of cities in the Zone, including Matamoros, Laredo and Nogales, but the total population does not exceed 100,000. Recent Mexican official reports say there are no industries of importance in the Free Zone, which is explained by the fact that manufactures produced there are required to pay the regular duty charges if taken into other parts of Mexico, and the tariff of this country practically keeps them out of the United States. Thus manufacturing industries have to depend upon the limited home consumption. All merchandise imported into the Zone for consumption there pays only ten per cent. of the regular tariff charges, but if shipped out of the Zone into the interior of Mexico, has to pay the additional 90 per cent. of the duties. The Secretary of the Treasury, Senor Limantour, in his report, says: "Many distinguished financiers and eminent statesmen are opposed to the Free Zone, but all recognize the fact that, on account of existing circumstances on the northern frontier, its sparse population, and its lack of resources in agriculture, industry or mining, the privilege could not be abolished without compensation, and the

problem lies in choosing some other advantage without prejudice to the rest of the country. The attitude of merchants in the interior is in general hostile to the Free Zone, because they consider it a privilege granted to only a certain portion of the country; but merchants who are far from the frontier do not consider it injurious. Mexican merchants who are near the Free Zone do not fear its competition, but complain of it because they cannot distribute their goods there without documents and fiscal inspection, as in the rest of the country."

THE MARYLAND GEOLOGICAL SURVEY.—The Baltimore *Sun* says that the Maryland Geological Survey, in cooperation with the United States Department of Agriculture and State Experiment Station, has been making a special study of the distribution of soil types while the geological survey has been in progress. Mr. C. W. Dorsey has been in charge of this phase of the work. The connection between the soils and the indigenous plant life is readily apparent, and the Survey is paying some attention to the distribution of the flora of the State.

WEST INDIAN WEATHER SERVICE.—On July 7th last, Congress authorized the Chief of the Weather Bureau, with the consent of the various foreign Governments concerned, to establish and equip meteorological observation stations at such points in the West Indies and on the coast of the mainland bordering the Caribbean Sea as might be desired. The purpose of this extension of the weather service is to collect and disseminate information of the approach of tropical hurricanes or other storms to the West Indies and our coasts, and to publish such further climatological data as may be of public benefit. Preparations were at once begun, permission to establish the stations was readily obtained from a number of the Governments, and observers were sent to establish the stations. These stations are now in operation at Willemstad (Curacao), at Santiago (Cuba), at Kingston (Jamaica), at Port of Spain (Trinidad), at Santo Domingo (Santo Domingo), at St. Thomas, at Barranquilla (Colombia), at Bridgetown (Barbados), at St. Christopher (St. Kitts), and at Colon (Colombia). The central station is at Kingston, Jamaica, and all other stations of the system cable daily to Washington and Kingston reports of observations taken at 6 A.M. and 6 P.M., seventy-fifth meridian time. In the event of premonitions of approaching hurricanes special observations are telegraphed. This service was hastily organized to meet a demand on the part of naval and commercial interests for

warning of destructive storms in the Gulf, the Caribbean Sea and the West Indian Islands. Arrangements were made for the prompt transmittal of the information to our fleets in West Indian and Southern waters, and to West Indian and Southern coast ports in threatened districts. Prof. E. B. Garriott, who is in charge of the service, wrote to the *Monthly Weather Review*, under date of Aug. 3:

"The service is not organized for local climatic studies, but it is confidently expected that through the co-operation of representatives of European Governments having possessions in the West Indies, and of the countries bordering on the Caribbean Sea and the Gulf of Mexico on the south and west, a system of weather reporting stations can be permanently established, which will not only permit the forecasting of hurricanes and northerns, but allow of such a determination of the climatic conditions as will be a most important factor in developing the wonderfully rich agricultural resources of the West Indian Islands."

ASIA.

EXTENSION OF BRITISH TERRITORY AT HONG KONG.—The accompanying map from the *Geographical Journal* (Sept., 1898), shows by a broken line the present limits of the territory of Hong Kong controlled by Great Britain. On June 9 the Chinese Government leased to Great Britain for ninety-nine years certain territories on the mainland, opposite Hong Kong, which were needed



to assure the proper protection of the colony and also to provide for commercial expansion. The island of Hong Kong has proved too small for the requirements of its immense and growing trade. The concession includes the whole of the peninsula opposite Hong Kong, as far as a line joining Deep Bay and Mirs Bay as well as the island of Lan-tao. The waters of both bays are included in the list, but

their northern shores are retained by China. The total area is about 200 square miles, all of which will be under British jurisdiction, except within the native city of Kau-lung. China reserves the right to use the leased waters for her own ships whether belligerent or neutral. Fifty years ago the place where Victoria now stands on the island of Hong Kong was a fishing village containing a few scores of squalid huts. On this site is now a splendid city of 250,000 inhabitants, and its prosperity has grown out of the fact that it has represented in the far East the greatest trading nation in the world. It made Great Britain a neighbour of China, Japan, and the islands of the Malayan waters, and, other things being equal, trading peoples are in the habit of dealing more largely with their neighbours than with others. Hong Kong is the great commercial clearing house in the far East. Manila, with its commanding position in relation to all of China's ports from Canton to the Yangtse, may some time rival Hong Kong in this respect.

AFRICA.

CIRCUMNAVIGATION OF LAKE BANGWEOLO.—Mr. Poulett Weatherley, in the summer of 1896, was the first explorer to circumnavigate Lake Bangweolo. His examination of the north-western and western sides constitutes new discoveries. He gained great influence over the natives, and his fearlessness seemed to deeply impress them. As he approached the west shore of the lake at Karoma's *boma* he saw the hills swarming with natives who carried bows, spears, axes and guns. His own weapons consisted merely of a bow and one arrow, but he did not hesitate to jump ashore among the densely packed crowd. Upon an order from their chief the natives paid homage to the white visitor by dropping on their knees and bending their heads to the ground, and the explorer had no trouble with them. In the account of his work printed in the *Geographical Journal* (Sept., 1898), Mr. Weatherley writes that he made no sounding in the lake over fifteen feet. The lake surface, therefore, is usually still, a very strong wind raising only the smallest sea. The lake was formed by the water from the great watershed of the Tanganyika plateau, which gradually overflowed the country at its base. On the east and south-east there is no barrier to check the waters, and in those directions a large swamp from twenty to forty miles in breadth extends beyond the proper limits of the lake. Ranges of hills hem in the lake on its west and south-west coast. Along the north-west coast is an isthmus extending into the lake and connecting points on the mainland about thirty miles apart. The area

enclosed between the isthmus and the mainland is occupied by a large sheet of water called Chifumauli. Bangweolo, the name which Livingstone gave to the lake, is not known in the country. Mr. Alfred Sharpe suggests that the word may have come from Pa-mwelo, which means "at the lake." Mr. Sharpe says that in this part of Africa there is no special name for any lake, the word "Tanganyika" does not really mean any particular lake, but simply a large piece of water. It is the same with the words "Nyassa," "Nyanza," and other words used to designate water surfaces.

Mr. Weatherley draws an idyllic picture of the peace and happiness of some of the densely populated islands. Speaking of Kisi Island, he says nearly all the people in the evening he spent with them were employed in one way or another. They were making and mending mats, beating the bark of the *mitai* tree into cloth, carving pipe bowls, mending bows, smoking or chatting. Women were trooping in from the fields carrying pumpkins, cassava, bundles of firewood or calabashes of water from the lake, balancing all loads on their heads. The sheep and goats were being driven homeward to be penned for the night. War never comes near these happy islanders. They know nothing of the outside world, have all they need and seem to wish for nothing. The explorer expresses the hope that it will be centuries before civilization with its attendant evils robs Kisi Island of its present peace and contentment.

EXTENDING THE TELEGRAPH ACROSS THE CONGO STATE.—The telegraph line from Boma on the lower Congo to Stanley Pool, a distance of about 300 miles, has been completed. The line is now building between the Pool and Kwa Mouth on the upper Congo. The Government has decided to extend this line clear across its territory from the Atlantic to Lake Tanganyika, and an expedition left Brussels late in August, according to *Le Mouvement Géographique*, to go to Tanganyika by the Nyassa route and begin building the line from the east end. Ten Europeans were in the party, including Mr. Thornton, who has had much experience in telegraph construction in India, Australia, and South Africa. The line, in its central part, will follow the great bend of the Congo.

A STEAMBOAT ON LAKE CHAD.—The Paris newspapers announce the arrival on November 1st last of the steamer *Léon Blot* on the waters of Lake Chad. M. Gentil has, therefore, succeeded in the enterprise which he was sent out three years ago to accomplish, of placing a steamer on the Shari River and Lake Chad. His steamer was taken up one of the northern tributaries of the Mobangi, afflu-

ent of the Congo, and transported by natives across the water parting between the Congo and Shari basins, where it was launched upon the tributary of the Shari River, and then made a successful descent of that river to the large lake on the edge of the Sahara. Near the mouth of the Shari, M. Gentil writes, the lake presented the appearance of a veritable sea, but right at the mouth a number of islands blocked the entrance of the river and nothing is to be seen but grass, reeds and papyrus. No firewood could be obtained on the shores of the lake, though there is an abundance of it on the banks of the lower Shari. On account of the scarcity of supplies M. Gentil was not able to make a complete exploration of the lake, but returned to Baghirmi and the Gribingi, where he wrote the letter announcing the launching of the first steamer on Lake Chad.

OCEANIC RESEARCHES.

ADMIRALTY SURVEYS IN 1897.—Last year, eight British naval vessels with three small hired steamers, manned by seventy-five officers and 756 men, were employed on hydrographic surveys on the home and foreign stations. The number of newly discovered rocks reported shows no signs of diminishing. Records of no less than 190 rocks and shoals, dangerous to navigation, were received by the Hydrographic Office and due notice was issued to mariners. One of the surveying vessels made a long cruise to Honolulu, via Palmyra and Fanning Islands, to search for reported shoals, survey islands and obtain soundings that would be useful for the proposed Pacific cable. From Fiji a line of soundings was run through the Nanuku passage to the reported positions of the various banks lying near the parallel of 12° S. and extending over several degrees of longitude. The Lalla Rookh, Robbie, Adolph, Turpin and an unnamed shoal were found as well as two other banks, which received the names of Home and Tuscarora. These banks rise from a general depth of 2,500 fathoms and are of the usual coral formation. They vary between three and twenty miles across, and the larger ones show the submerged atoll form. The smaller are flat, with from nine to twenty fathoms of water over them. The general depth of the larger banks is from twenty-five to twenty-seven fathoms. No danger was found on any of them.

THE GREAT WIND AND CALM BELTS.—Mr. R. DeC. Ward, writing in the *Journal of School Geography* (Sept., 1898) of his climatic observations during his recent voyage around South America, speaks of the fact, to which teachers should call the attention of their pupils, that text books and wind charts are apt to give a too rigid idea of

the wind and calm belts and also the limits of the ocean currents. The fact is that travellers rarely pass suddenly from one condition to another, there being no distinct line of demarcation, but rather a gradual change. Mr. Ward illustrates this by the gradual transition he observed between the north-east trade wind and the doldrums, in latitude $10^{\circ} 2'$ N. lat., $44^{\circ} 2'$ W. long. He was there in the middle of June and at that season, when the sun is north of the equator, the north-east trade does not in the part of the Atlantic above indicated extend nearer the equator than about lat. 7° N. lat., the equatorial rainy belt being at this time as far north as this. There were three days of characteristic trade conditions and then came a gradual decrease in wind velocity and an increase in the number and duration of showers, both of which indicated approaching doldrum conditions. On June 15, there was a mixture of trade and doldrum conditions, but the steady, easterly wind all day was a continuance of the trade influence. This combination of the two types where the two wind belts joined was most interesting and the interest was continued throughout the following day (lat. $6^{\circ} 33'$ N., long. $42^{\circ} 39'$ W.) which brought the return of trade conditions interrupted by one heavy tropical shower, at 10 A.M. The water temperature of this day reached 83.5° , the highest noted on the voyage, and the air temperature reached 84.9° . Mr. Ward continues:

"The writer read somewhere, years ago, in an account of the doldrum rains, that the amount of fresh water which falls in one of these heavy showers is so great that the surface water of the ocean actually becomes fresh, and he had often, in the course of his teaching used this as an illustration of the remarkably heavy rainfall of those latitudes. The atmosphere of incredulity which pervaded the class-room whenever this story was told caused him to resolve to test the truth of the report at the earliest opportunity. This opportunity came on June 15. After a very heavy shower of half an hour's duration, some of the surface water of the ocean was drawn up in a bucket and on being tested was found to be almost perfectly fresh. The writer can, therefore, assure teachers that they may use this illustration with perfect confidence."

GERMAN DEEP SEA EXPEDITION.—The *Valdivia* left Hamburg Aug. 1 on its scientific mission around the world. The expedition which was planned by Prof. Chun was organized to make zoological, physical, and chemical researches. Last winter the German Parliament voted 300,000 marks to cover the expenses of the expedition and further grants will be made if necessary for the same purpose

and to publish the results. The *Valdivia* was fitted up with bacteriological, chemical and biological laboratories, as well as with instruments for sounding, taking temperatures and samples of deep sea waters, and for dredging and working the plankton nets at various depths. The vessel is as large if not larger than the *Challenger* and the laboratories and work-rooms are more commodious and better fitted with apparatus for scientific investigation than in any previous expedition. The cabins occupied by the scientific staff are handsome and roomy and the large cabin contains a very fine scientific library, including a complete set of the *Challenger* reports. The scientific staff includes Prof. Carl Chun, leader, Dr. Schott, oceanographer, well known for his recent researches on sailing vessels running between Germany and the East Indies, and also a botanist, a chemist, a physician and bacteriologist and three zoologists. The *Valdivia* rounded the north of Scotland and proceeded for Cape Town, Africa, it being estimated that she will be 100 days in reaching that point. After leaving Cape Town, the plan includes an examination of the Agulhas bank and the deep waters to the south; then southward to the edge of the Antarctic ice, returning northward to the centre of the Indian Ocean to Cocos and Christmas Island and to Padang. From Padang, the route leads to Ceylon, Chagos, Seychelles and Amirante Islands, to Zanzibar. Then home by Socotra, the Red Sea and the Mediterranean, Hamburg being reached early in June next year.

OCEAN TEMPERATURES.—Sir John Murray, the editor of the “Results of the Challenger Expedition,” has an important paper in the *Geographical Journal* (Aug., 1898) on the Annual range of Temperature in the Surface Waters of the Ocean. His chart takes account not of the mean monthly temperatures, but of the so-called absolute annual range or the difference between the absolute extremes of temperature. From his paper and chart it appears that the lowest recorded temperature reading, at the surface of the sea, is 26° Fahr. in the north Atlantic, east of Nova Scotia, and the highest reading in the open ocean is 90° Fahr., recorded in the tropical Pacific, both north and south of the Equator, though readings of 94° and 96° Fahr. are recorded in the Red Sea and Persian Gulf, respectively. The greatest known range of temperature of surface waters throughout the whole world is thus 70° Fahr. The greatest annual range, exceeding 50° Fahr., occurs over a small portion of the Japan Sea and over the larger portion of the Atlantic Ocean, east of Cape Cod.

The large annual ranges of temperature of the ocean surface, viz., 25° or more in the north Atlantic and north Pacific, undoubtedly represent the influence of the cold north-west winds blowing off shore in winter, as contrasted with the warm, southerly winds blowing on or along shore in summer. The regions of large range are, therefore, confined to the western portions of the oceans and the eastern shores of the continents. The *Monthly Weather Review*, commenting on Dr. Murray's paper, says:

"At first thought one would expect to find in Dr. Murray's lines of equal annual temperature range some traces of the course of the Gulf Stream and Kuroshio, but it is only the changes in the positions of these currents that can produce ranges of temperature, and these changes are so largely controlled by the wind that Dr. Murray's charts show principally the effect upon the ocean water of changes in the atmospheric circulation. The same principle applies also to the closed seas, such as the Mediterranean and Baltic, the Red Sea and the Persian Gulf, in all which cases a larger range of temperature is observed at the head of the sea than at the mouth of the sea, due to the fact that the highest temperatures occur at the head when the wind blows towards that direction in the summer and the lowest when the wind blows in the opposite direction, at the opposite season of the year. There is, therefore, in this map no comfort for those who maintain that the Gulf Stream or the Kuroshio, respectively, alleviate or control the temperatures of the eastern portion of the Atlantic and Pacific oceans and the adjacent portions of Europe and America. Everywhere we see that it is the wind that controls the temperature of the surface of the ocean and then carries this ocean temperature inward over the land. The same remarks apply to the southern hemisphere, where Dr. Murray's chart shows that the greatest range of ocean temperatures is in the region where there is the greatest annual range of wind direction."

POLAR REGIONS.

SPITZBERGEN CIRCUMNAVIGATED.—The London *Times* (Sept. 22) says that the *Antarctic*, with the Swedish Expedition under Dr. A. G. Nathorst, has returned to Tromsö, after a highly successful cruise to the seas and islands around Spitzbergen. The *Antarctic* left Tromsö on June 8 and reached Bear Island on the 11th. A week was spent there. The whole island was surveyed, and an excellent map on a scale of 1:50,000 was drawn by Lieut. Kjellstrov and Dr. Hamberg, which shows that the old maps are quite incorrect. The

geological work was also successful. Previously only carboniferous strata were known, and an old rock without fossils. In this rock, however, the expedition found fossils, showing the age to be Silurian. Another series was also discovered, the age of which is probably Devonian. The geologists discovered fossils in the "Three Crowns," forming the top of Mount Misery, which will probably prove to be of Jurassic age. The geology of the little island is consequently of great interest. Some new zoological and botanical discoveries were made. The *Antarctic* went east of Spitzbergen to ascertain the position of the ice-pack, but, as was expected, the ice did not permit of the expedition reaching King Charles Land. They consequently sailed round the west of Spitzbergen, when Bell Sound was surveyed and mapped, a most necessary work, since the old maps of Van Myen Bay (Bell Sound) are very incomplete.

After having visited some points of interest in Ice Sound, the expedition proceeded westwards and did some hydrographical work as far as the margin of the Greenland ice-pack ($78^{\circ} 1' N.$ lat., $4^{\circ} 9' W.$ long.). Thence the ship was turned to the south and east of Spitzbergen, and reached King Charles Land, which was completely covered by an ice-cap, broken off at the sea shore and ending in a perpendicular ice wall, just as is found in the Antarctic Continent, though in miniature. Great table-formed icebergs are given off from this ice-sheet.

From White Island, which is larger than indicated on the maps, the *Antarctic* made its way through alternating heavy ice and open water to Charles XII. Island, whence the expedition proceeded northwards and reached $81^{\circ} 14' N.$ lat. Had the expedition been there a fortnight earlier it would certainly have reached a higher latitude, but northerly winds had prevailed for some time, so that the pack had been driven south. The expedition then passed north of the Seven Islands and proceeded to Treuenberg Bay, Grey Hook, and Danes Island, from which they steered southwards along the western coast of Spitzbergen. When the *Antarctic* reached the south end of Prince Charles Foreland, the circumnavigation of the whole of Spitzbergen, with the surrounding islands, was completed. Probably no vessel has ever done this before. Dr. Nathorst's intention to go to Stor Fiord was rendered impossible through heavy gales, and, having waited in vain for about a week for the weather to improve, he steered southwards, passing Bear Island again and doing hydrographical work. The scientific work of the expedition has been most successful. The party have brought back large geological, botanical and zoological collections. The geology,

botany and zoology of King Charles Land are now completely known, and there are evident important connections between the geology of Spitzbergen and that of Franz Josef Land.

THE GLACIERS OF SPITZBERGEN.—Sir Martin Conway has described his work in 1897 among the Spitzbergen glaciers, in the *Geographical Journal* (Aug., 1898). He regards as the principal geographical result of his second expedition to this island group the discovery that no large part of Spitzbergen, except New Friesland and North East Land, is covered by an ice-sheet. The old idea of Spitzbergen was that its interior consisted of a great ice-sheet fringed at the edge by a number of boggy valleys and green hillsides. His explorations have shown the falsity of this conception, as the larger part of the region consists of glacial and mountain areas, to which the term inland ice does not apply, as the juxtaposition of any number of glaciers does not form an ice-sheet, but merely a glacial area.

SPITZBERGEN WITHOUT AN OWNER.—No nation has ever yet claimed Spitzbergen as its own, though the people of Sweden and Norway seem to regard it as a part of their kingdom, because it lies nearest to their coasts and has been explored chiefly by them. The *Geographische Zeitschrift* says the Russians have recently put forward some claim to the group in consequence of the invitation of the Swedish Government to join in the measurement of an arc on Spitzbergen. The group has an area of 27,000 square miles and though uninhabited it is by no means valueless, the region being rich in minerals, such as coal, iron, marble and graphite. There are indications also of the existence of gold. The seal and other fisheries have been and still are of great importance and demand State regulation to prevent their total extinction.

MR. WELLMAN'S EXPEDITION —Mr. Wellman left Tromsö on June 27 for Franz Josef Land. His party includes Prof. J. H. Gore of Columbia University, Mr. Evelyn B. Baldwin, Dr. Hofma, and Mr. Quirof Harlan of the United States Coast and Geodetic Survey. It is Mr. Wellman's intention to advance northward from Cape Flora and, if possible, beyond the place where Nansen wintered, where he will build a hut and spend the dark season. Next spring he hopes to go on towards the North Pole, but if conditions are not favorable he will wait till the following spring. It is gratifying to hear that the meteorological observations of Mr. B. O. French of the Coast and Geodetic Survey and Dr. H. Alme of the Meteor-

logical Office at Stockholm, north of Spitzbergen on the first Wellman expedition, are to be printed as a bulletin of the Weather Bureau. Competent observations at points so isolated and so far removed from the regular meteorological stations should be printed in all detail, as they may be of much value in tracing storms and weather over the North Atlantic.

PROPOSED EXPEDITION TO SANNIKOFF LAND.—Baron E. von Toll has outlined the plans of an expedition which he desires to lead to Sannikoff Land, north of the New Siberia Islands, next year. Between 1805 and 1811, Jacob Sannikoff, a Yakutsk merchant, made a series of bold journeys to the New Siberia Islands, of which he was one of the discoverers. He spent a full summer on the northern island of the archipelago and sighted two lands to the north, which were indicated on the map of the islands that was produced by the topographer Pshenitsyn. A few years later Lieut. Anjou, who was sent out by the Russian Government to settle more definitely the topography of the archipelago, was not able to get a view of the lands sighted by Sannikoff, who had made two unsuccessful attempts to reach them by sledgeing over the sea ice. After Anjou's last sledge journey along the northern coasts of New Siberia, he returned in 1823 and reported that there was no land to the north of the archipelago which could be attained with the means at hand. So the "Land sighted by Sannikoff" disappeared from the maps until about sixty years later, in 1881, when the De Long expedition discovered Bennett Land, which is undoubtedly the land that Sannikoff sighted from the High Cape of New Siberia. In 1886 Baron von Toll was able to convince himself of the existence of the land that Sannikoff saw to the north of Kotelnyi Island. Baron von Toll saw from the mouth of the Mogur River the sharp outlines of four truncated cones, like table mountains, from which a low foreland extended towards the east.

In his paper he discusses the geological bases for believing that Sannikoff Land belongs to an undiscovered archipelago, which may possibly have the size of Franz Josef Land but hardly the size of Spitzbergen or Greenland. He desires to explore this archipelago and to study it in its various scientific aspects, with the collaboration of an astronomer, a meteorologist and a topographer, and a few Yakuts or Tunguses to act as hunters and dog drivers.

ANTARCTIC EXPLORATION.—Lord Salisbury, in reply to a letter sent to him by the Royal Geographical Society, urging upon the Government the duty of England to complete the work of explora-

tion in the Antarctic regions, begun by Ross half a century ago, has finally replied that he is not able to hold out any hope of the British Government "embarking upon an undertaking of this magnitude." It has also been ascertained that there is no prospect of any joint action from the Australian colonies. The Council of the Society, feeling that it is the duty of Great Britain to explore the vast region still unknown in the Antarctic, has authorized the President to take steps to obtain the necessary funds, not less than \$250,000, towards which the Society would contribute \$25,000.

Mr. Borchgrevink departed early in the summer for the scene of his proposed explorations in the neighborhood of Victoria Land, in the Antarctic, where he expects to be engaged for two years. The funds for his expedition were provided by Sir George Newnes. His Ship is the *Southern Cross*, which has already sailed in Antarctic waters. Captain Bernherd Jensen is in command, with two mates and a crew of twenty-four. A strong scientific staff was engaged, including Captain Kolbeck and Mr. Louis Bernacchi, as magnetic observers; Herr H. Klövstad, of Christiania University, as medical officer, and Messrs. N. Hansen and Hugh Evans, as zoologists.